

# What If California's Drought Continues?

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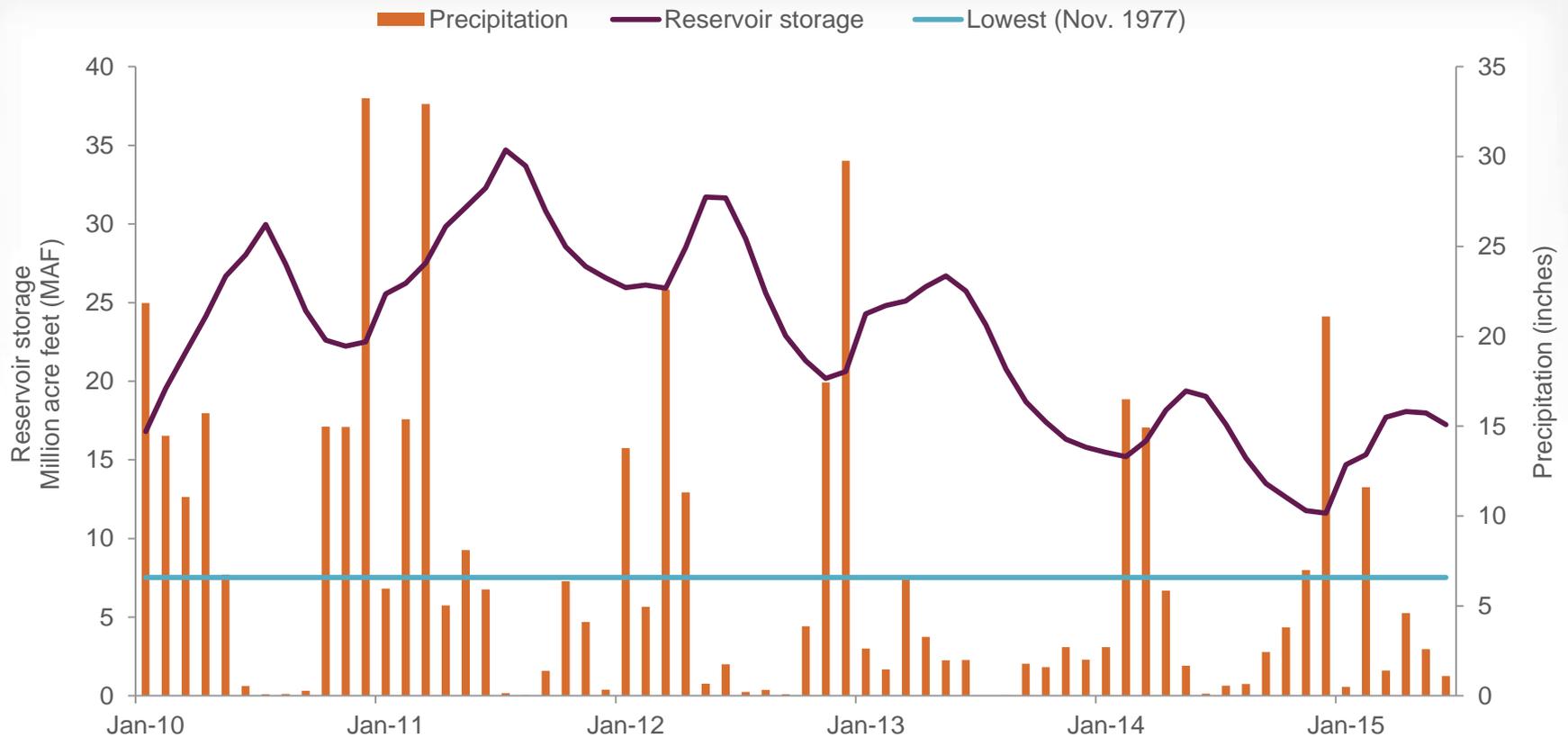


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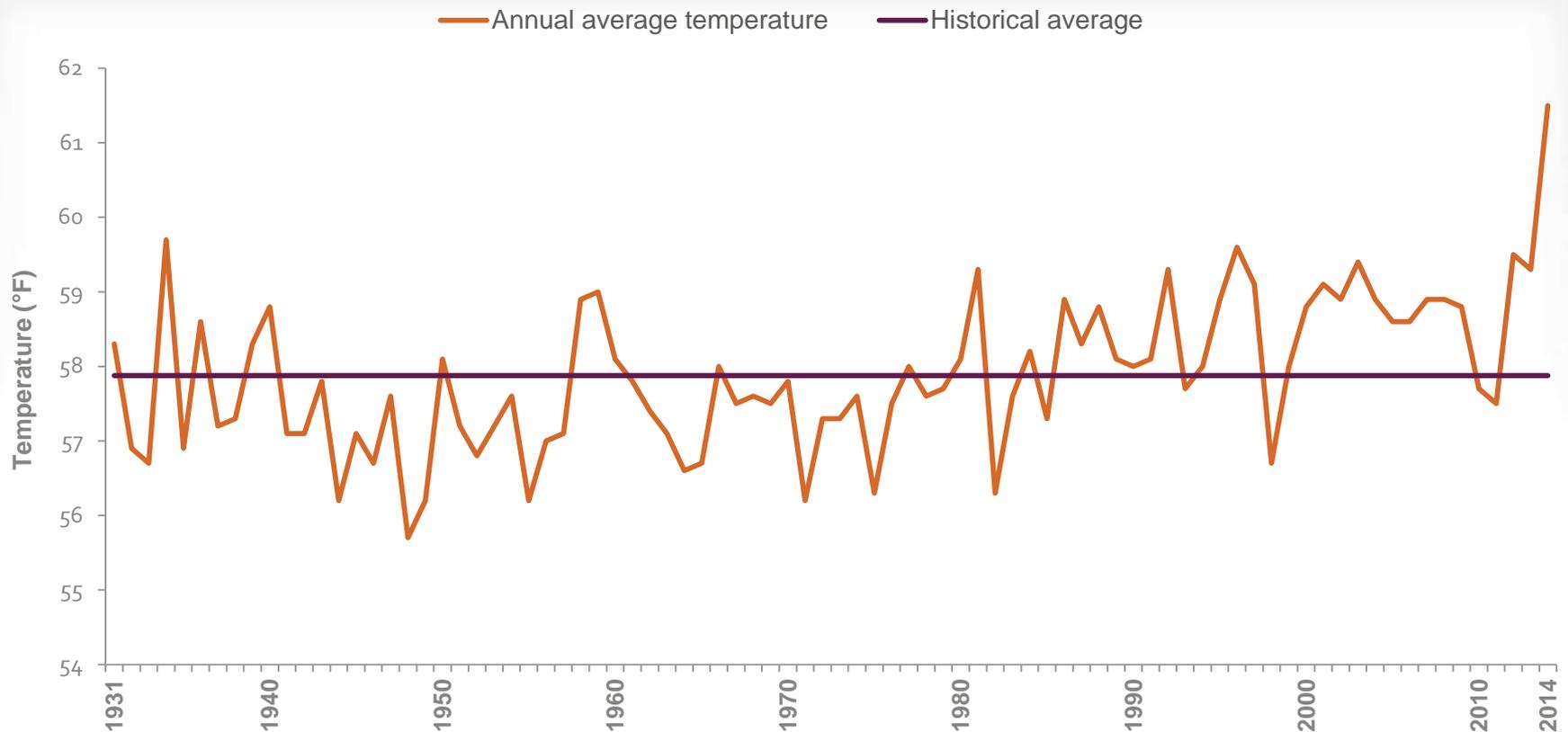
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# California is four years into a severe drought



SOURCE: California Department of Water Resources.

# High temps, reduced snowpack, low flows = “drought of the future”



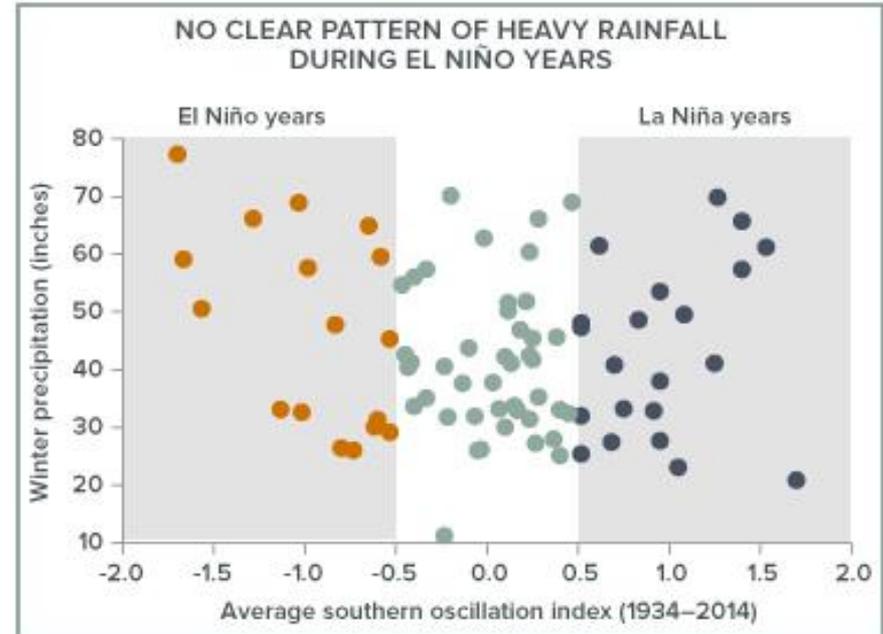
SOURCE: National Oceanic and Atmospheric Administration.

# Outline

- What if the drought continues?
- Four areas of concern
- Building drought resilience

# What if the drought continues?

- El Niño is an unreliable predictor
- Multiple wet years needed to recover
- Understanding likely impacts can help reduce harm



SOURCE: DWR and National Weather Service.

# Outline

- What if the drought continues?
- Four areas of concern
  - Cities and suburbs
  - Farms
  - Rural communities
  - Ecosystems
- Building drought resilience

# Cities and suburbs

- So far...
  - Investments paid off
  - Regional cooperation
  - Conservation working
- Continued drought...
  - Supplies more constrained
  - Pricing restrictions (Prop 218) and affordability issues
  - Some challenges with conservation mandate
  - But economic impacts likely to remain small



# Farms

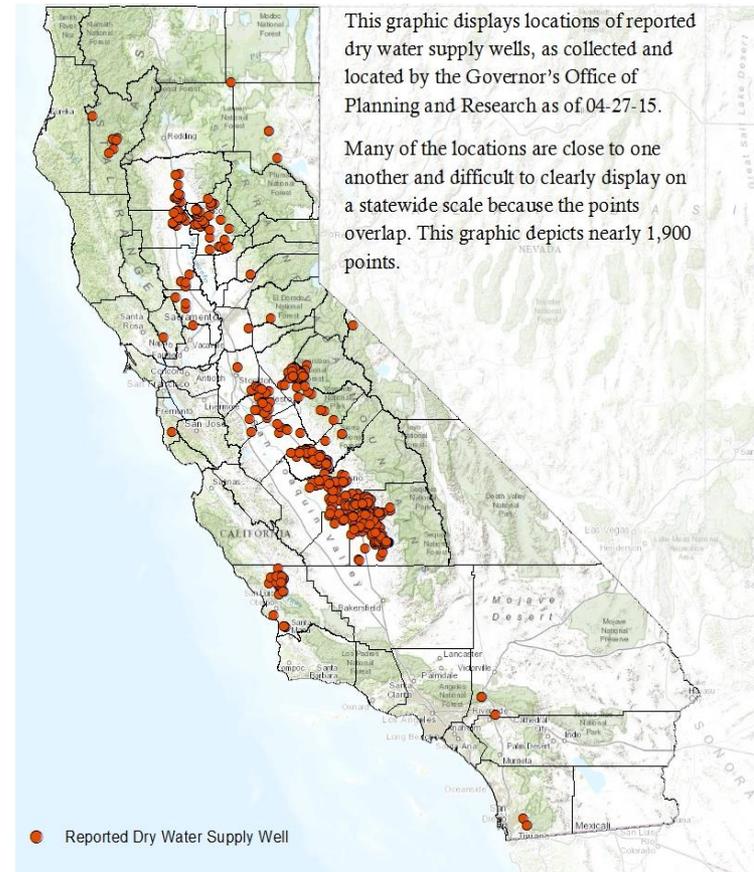
- So far...
  - Groundwater pumping, water trades staving off major losses
- Continued drought...
  - Losses remain moderate despite ~50% surface water cuts:
    - Fallowing (~550k acres, 6%)
    - Ag costs (4% of revenues)
    - Farm jobs (6%)
    - State GDP (<0.1%)
  - Pumping accelerates subsidence and infrastructure damage



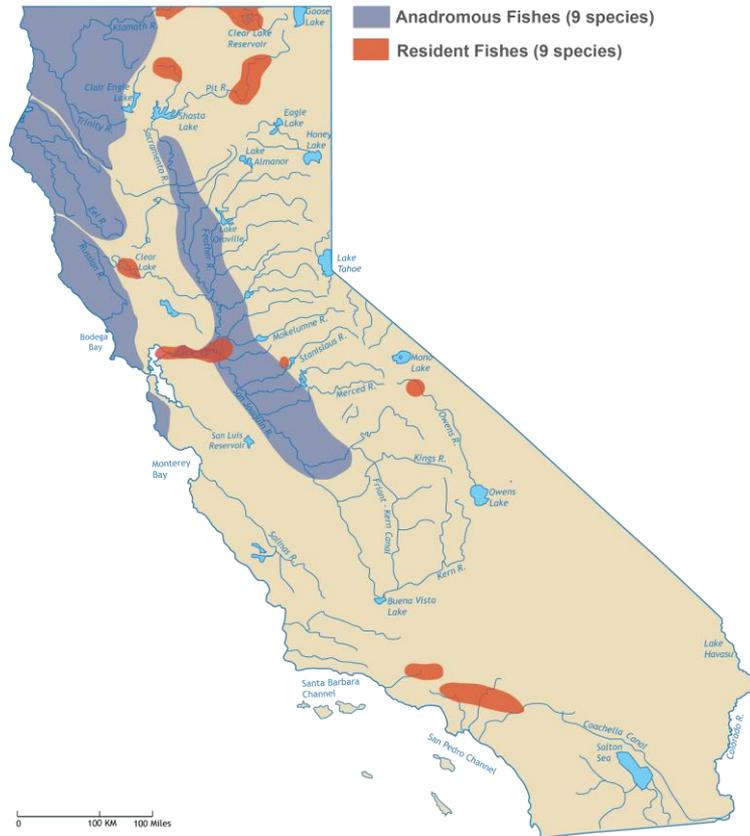
Source: NYT

# Rural communities

- So far...
  - 2,000+ dry domestic wells,
  - 100+ small systems in trouble
  - Strong emergency response
  - But time lags still too long
- Continued drought...
  - Increase in dry wells
  - Worsening air quality
  - Economic hardship



# Ecosystems: fish, waterbirds, forests



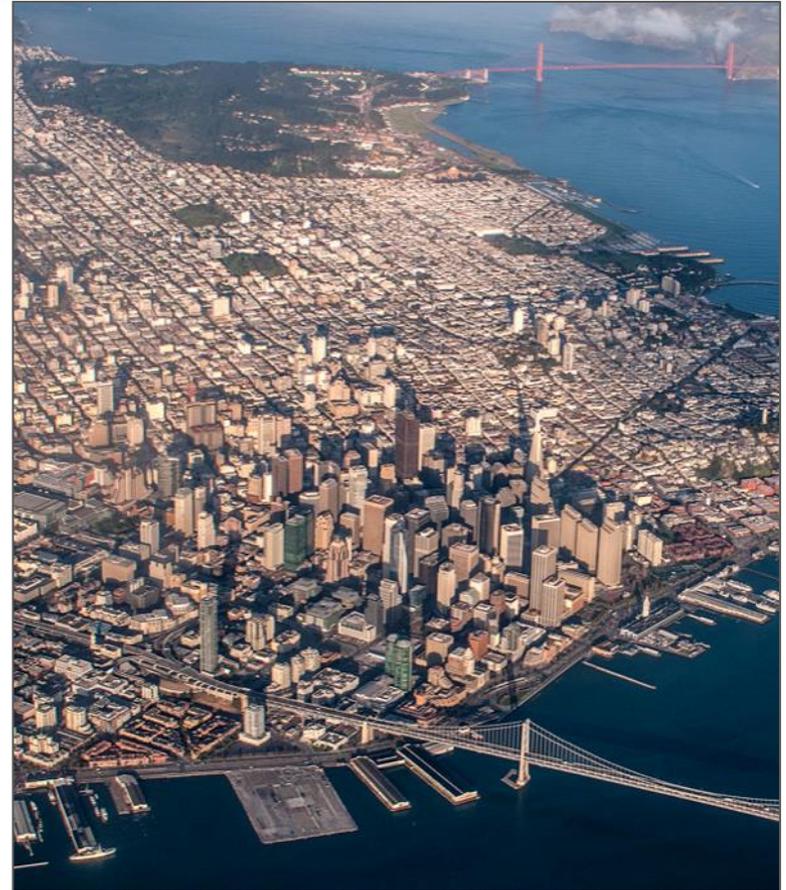
- So far...
  - Dramatic reduction in flows and habitat
  - Increased wildfire risk
  - Rescues and monitoring
- Continued drought...
  - 18 fish at risk of extinction
  - High waterbird mortality
  - Severe wildfire risk, with some permanent losses
  - More funding needed

# Outline

- What if the drought continues?
- Four areas of concern
- Building drought resilience

# What's working

- Diversified water portfolios
- Regional infrastructure development
- Coordinated emergency response



# Works in progress

- Mandatory conservation
- Water pricing
- Rural community supplies
- Groundwater management
- Water trading
- Waterbird management



# Difficult work ahead

- Improving curtailment process
- Modernizing water information
- Managing forests
- Managing surface water trade-offs
- Avoiding extinctions
- (Re)building environmental resilience



# Interesting days lie ahead, hopefully with lots of clouds\*



Photo: Jacob DeFlicht

# Notes on these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.